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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,377	04/12/2002	Mutsumi Suzuki	NITT.0057	9511

7590 03/20/2006

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EXAMINER
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NGUYEN, KEVIN M

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/031,377	<b>Applicant(s)</b> SUZUKI ET AL.	
	<b>Examiner</b> Kevin M. Nguyen	<b>Art Unit</b> 2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2, 5, 12, 15 and 17 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 6-11, 13, 14 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/02, 18/102</u> <u>1-18-02, 10-9-02</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Request for Continued Examination***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09 January 2006 has been entered. An action on the RCE follows:

### ***Drawings***

2. Figures 13-15 were received on May 25, 2005. These drawings are acknowledged.

### ***Response to Arguments***

3. This office action is made in response to applicant's amendment/argument filed on 08 December 2005. Claims 1-2, 11-12 and 16-17 are amended, and claims 2, 5, 12, 15 and 17 are allowed. Thus, claims 1-17 are currently pending in the application. Applicant's arguments, see page 8-10, filed 09 January 2006, with respect to the rejection(s) of claim(s) 1, 3, 4, 6-11, 13, 14 and 16 under the statutory basis for the previous rejection have been fully considered and are persuasive. Therefore, the

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rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art references.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 6,873,309. Current Application recites at least one limitation in claim 1 "wherein said first driving means sets the first electrode held in a non-selected state to a state of having an impedance higher than that of the first electrode held in a selected state"; whereas the conflicting U.S. Patent No. 6,873,309 recites at least one limitation in claim 1 "wherein said first drive unit subsequently sets each one of the first lines in a

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nonselection state to a selection state, said nonselection state of a high impedance state having a higher impedance as compared with the first lines in the selection state”.

Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that the scope of the claimed invention in current Application are broader than the scope of the claimed invention in U.S. Patent No. 6,873,309.

6. Claims 1-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No. 6,608,620. Current Application recites at least one limitation in claim 1 “a plurality of electron-emitter elements each having a structure comprised of a base electrode, an insulating layer and a top electrode stacked on one another in this order”; whereas the conflicting U.S. Patent No. 6,873,309 recites at least one limitation in claim 1 “each of said thin-film electron emitter elements being provided for one of said transistor elements, having a structure comprising a base electrode, an insulator and a top electrode stacked as layers placed one on another in this order of enumeration”.

Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that the scope of the claimed invention in current Application are broader than the scope of the claimed invention in U.S. Patent No. 6,608,620.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

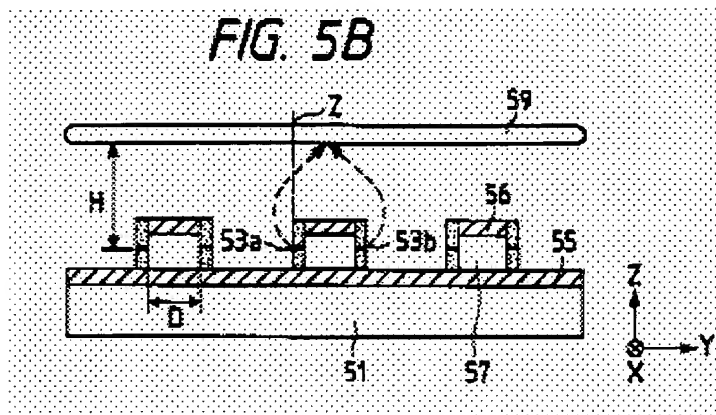
8. Claims 1, 4, 6-11, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al (US 5,912,531) in view of Sarrasin (IDS cited, US 5,600,343).

9. As to claims 1 and 11, Hasegawa et al teach an image display device associated with a method, the image display device comprising:

a display device [an image forming apparatus, see the title] including,

a first plate [a substrate 51, Fig. 5B] having,

a plurality of electron-emitter elements [a pair of electron-emitting regions 53a and 53b Fig. 5B] each having a structure comprised of a base electrode [Y-directional wire 55, Fig. 5B], an insulating layer [an interlayer insulator 57, Fig. 5B] and a top electrode [X-directional wire 56, Fig. 5B] stacked on one another in this order, said electron-emitter element emitting [the pair of electron-emitting regions 53a and 53b, Fig. 5B] electrons from the surface of the top electrode when a voltage of positive polarity is applied to the top electrode [see col. 11, lines 15-25];



a plurality of first electrodes extending [Dx1 through Dx<sub>m</sub>, Fig. 8, col. 17, line 11-14] in a row (or column) [X-directional wire 56, or Y-directional wire 55, Figs. 5A and 5B] direction for respectively applying driving voltage to the base electrodes of the electron-emitter elements lying in the row (or column) direction, of said plurality of electron-emitter elements, a part of each of the first electrodes forming said base electrode [see col. 11, lines 16-35];

a plurality of second electrodes extending [Dy1 through Dy<sub>n</sub>, Fig. 8, col. 17, line 11-14] in a column (or row) [Y-directional wire 56, or X-directional wire 55, Figs. 5A and 5B] direction for respectively applying voltage to the top electrodes of the electron-emitter elements lying in the column (or row) direction, of said plurality of electron-emitter elements [see col. 11, lines 16-35];

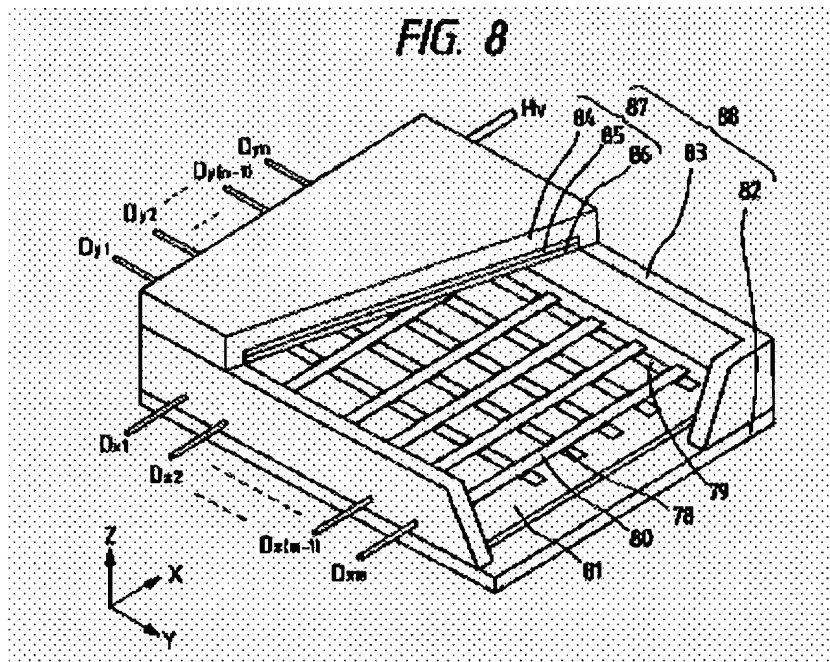
a frame component [a support frame 83, Fig. 8];

a second plate [a face plate 87, Fig. 8] having phosphors [fluorescent film 85, Fig. 8];

wherein a space surrounded by said first plate, said frame component and said second plate is brought into vacuum [a space vacuum, col. 17, lines 8-11];

first driving means [a scan circuit 112, Fig. 11] for supplying driving voltage to said respective first electrodes [Dx1 through Dxm, see col. 19, lines 35-51];

second driving means [at least one modulation signal generator 117, Fig. 11] for supplying driving voltage to said respective second electrodes [Dy1 through Dyn, see col. 19, lines 35-51].



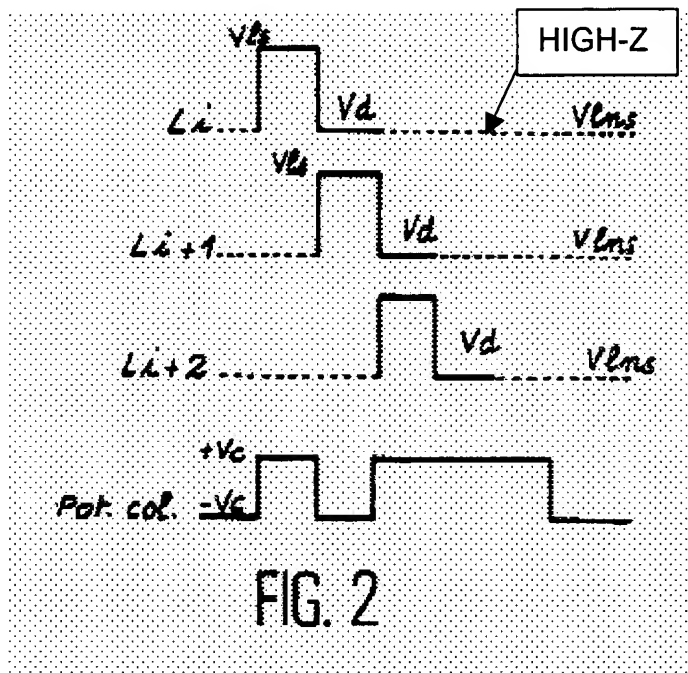
Accordingly, Hasegawa et al teach all of the claimed limitation, except wherein said first driving means sets the first electrode held in a non-selected state to a state of having an impedance higher than that of the first electrode held in a selected state.

However, it is noted that Cathodoluminescence comprises Field Emission (FEDs), Cathode Ray Tubes (CRTs), Vacuum Fluorescent Displays (VFDs), see [www.phosphortech.com/p10.htm](http://www.phosphortech.com/p10.htm). Fig. 2 of Sarrasin teaches an image display device [a



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cathodoluminescence] including said first driving means [the control circuit 26l-26n, Fig. 1] sets the first electrode held in a non-selected state to a state [the non-selection potential  $V_{lns}$ , Fig. 2] of having an impedance higher [high impedance (HZ)] than that of the first electrode held in a selected state [a potential  $V_d/V_l$ s applied throughout the selection time of the row  $L_i+1$ , col. 5, lines 25-43].



It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the driving waveform described in Fig. 2 as taught by Sarrasin in the image display device of Hasegawa et al in order to achieve the benefit of intend to drive the image display device, because this would reduce the capacitive consumption without reducing the useful addressing time (Sarrasin, col. 3, lines 19-21).

10. As to claims 4 and 14, Sarrasin conventionally discloses wherein said first driving means bring a first electrode held in a non-selected state to floating state [The

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unaddressed or unselected rows are, as a function of the screen type, either raised to a non-selection potential  $V_{lns}$ , or are left floating or placed under high impedance, col. 1, lines 38-40].

11. As to claim 6, Sarrasin teaches wherein said each electron-emitter element includes a top electrode busline which is electrically connected to the top electrode and functions as the second electrode [see col. 17, lines 10-15].

12. As to claim 7, Sarrasin teaches wherein said first electrode function as the base electrode of said each electron-emitter element [see col. 17, lines 10-15].

13. As to claims 8 and 9, Sarrasin teaches wherein said base electrode comprises a metal, and a semiconductor [see col. 9, lines 52-59].

14. As to claim 10, Hasegawa teaches wherein said insulating layer comprises a multi-layer film of a semiconductor and an insulator [the interlayer insulation layers 57 are made of  $SiO_2$  etc., col. 9, lines 37-38].

15. As to claim 16, Hasegawa et al teach an image display device comprising:  
a display device [an image forming apparatus, see the title] including,  
a first plate [a substrate 51, Fig. 5B] having,  
a plurality of electron-emitter elements [a pair of electron-emitting regions 53a and 53b Fig. 5B] each having a base electrode [Y-directional wire 55, Fig. 5B] and a top electrode [X-directional wire 56, Fig. 5B], said electron-emitter element [the pair of electron-emitting regions 53a and 53b, Fig. 5B] emitting electrons from the surface of the top electrode when a voltage of positive polarity is applied to the top electrode [see col. 11, lines 15-25];

a plurality of first electrodes extending [Dx1 through Dxm, Fig. 8, col. 17, line 11-14] in a row (or column) [X-directional wire 56, or Y-directional wire 55, Figs. 5A and 5B] direction for respectively applying driving voltage to the base electrodes of the electron-emitter elements lying in the row (or column) direction, of said plurality of electron-emitter elements, a part of each of the first electrodes forming said base electrode [see col. 11, lines 16-35];

a plurality of second electrodes extending [Dy1 through Dyn, Fig. 8, col. 17, line 11-14] in a column (or row) [Y-directional wire 56, or X-directional wire 55, Figs. 5A and 5B] direction for respectively applying voltage to the top electrodes of the electron-emitter elements lying in the column (or row) direction, of said plurality of electron-emitter elements [see col. 11, lines 16-35];

a frame component [a support frame 83, Fig. 8];

a second plate [a face plate 87, Fig. 8] having phosphors [fluorescent film 85, Fig. 8];

wherein a space surrounded by said first plate, said frame component and said second plate is brought into vacuum [a space vacuum, col. 17, lines 8-11];

first driving means [a scan circuit 112, Fig. 11] for supplying driving voltage to said respective first electrodes [Dx1 through Dxm, see col. 19, lines 35-51];

second driving means [at least one modulation signal generator 117, Fig. 11] for supplying driving voltage to said respective second electrodes [Dy1 through Dyn, see col. 19, lines 35-51].

Accordingly, Hasegawa et al teach all of the claimed limitation, except wherein said first driving means sets the first electrode held in a non-selected state to a state of having an impedance higher than that of the first electrode held in a selected state.

However, it is noted that Cathodoluminescence comprises Field Emission (FEDs), Cathode Ray Tubes (CRTs), Vacuum Fluorescent Displays (VFDs), see [www.phosphortech.com/p10.htm](http://www.phosphortech.com/p10.htm). Fig. 2 of Sarrasin teaches an image display device [cathodoluminescence] including said first driving means [the control circuit 26l-26n, Fig. 1] sets the first electrode held in a non-selected state to a state [the non-selection potential  $V_{lns}$ , Fig. 2] of having an impedance higher [high impedance (HZ)] than that of the first electrode held in a selected state [a potential  $V_d/V_l$ s applied throughout the selection time of the row  $Li+1$ , col. 5, lines 25-43].

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the driving waveform described in Fig. 2 as taught by Sarrasin in the image display device of Hasegawa et al in order to achieve the benefit of intend to drive the image display device, because this would reduce the capacitive consumption without reducing the useful addressing time (Sarrasin, col. 3, lines 19-21).

16. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarrasin.

Sarrasin teaches the high impedance [HIGH-Z, col. 5, lines 25-43, see rejection of claim 1]. Sarrasin teaches all the subject matter claimed with the exception of the high impedance is an impedance of  $1M\Omega$  or more. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that

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Sarrasin's high impedance HIGH-Z would be 1M $\Omega$  or more. Absent a showing of criticality it would have been within the level of skill in the art and obvious to one having ordinary skill to engineering design the range/size of a well-known element is normally not directed toward patentable subject matter as desired as was judicially recognized in re Rose, 105 USPQ 237 (CCPA 1955) and in re Reven, 156 USPQ 679 (CCPA 1968).

### ***Allowable Subject Matter***

17. Applicant's arguments, see pages 8-10, filed 1 September 2006, with respect to 2, 5, 12, 15 and 17 have been fully considered and are persuasive. The rejection of claims 2, 5, 12, 15 and 17 has been withdrawn.

18. Claims 2, 5, 12, 15 and 17 are allowed.

19. The following is an examiner's statement of reasons for allowance:

The instant application is directed to a nonobvious improvement over the invention described in Pat. No. 5,912,531 to Hasegawa et al. and Pat. No. 5,600,343 to Sarrasin. The improvement comprises an image display device comprising at least one limitation "wherein said second driving means sets the second electrode held in a non-selected state to a state of having an impedance higher than of the second electrode held in a selected state." This patentable distinction is included in all independent claims 2, 12 and 17.

### ***Response to Arguments***

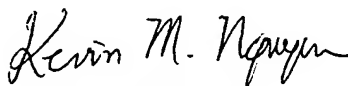
20. Applicant's arguments with respect to claims 1, 3, 4, 6-11, 13, 14 and 16 have been considered but are moot in view of the new ground(s) of rejection

***Conclusion***

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Nguyen whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, a supervisor Richard A. Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see <http://portal.uspto.gov/external/portal/pair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kevin M. Nguyen  
Patent Examiner  
Art Unit 2674

KMN  
March 13, 2006